XXXII. *Notes on* Hawaiian Hemiptera, *with descriptions of new species.* By R. C. L. Perkins, D.Sc., M.A., F.E.S.

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NABIDAE.

Reduviolus, Kirby.

In September 1909 Kirkaldy published a revision of the Hawaiian species of *Reduviolus*, this being his final one of several papers on the subject, each of these several papers giving very different conclusions. I have had occasion to make some study of the Hawaiian species at different times, both when naming my own specimens, and later when it became necessary for me to straighten out the Hawaiian collection, entrusted to Kirkaldy by the Sandwich Island Committee. This latter collection, owing to his sad and unexpected death, was left in great confusion and required much work before it could be arranged and the types determined, and for the same reason the proofs of his last contribution to the "Fauna Hawaiiensis" were unrevised. Having in my own possession the Blackburnian collection of Hawaiian Hemiptera, I have been able to compare specimens of the species described by Blackburn and White with those more lately collected.

Kirkaldy's revision, above mentioned, was published in the Proc. Haw. Ent. Soc. II, p. 49 et seq. His work on the genus contained in the "Fauna Hawaiiensis," II, p. 546 et seq., was written before this revision, but was not published till December 1910, or after his death. Consequently a number of the species given in the "Fauna Hawaiiensis" are sunk in the revision published earlier. There are also in the latter a number of serious and almost inexplicable errors connected with the sex of the insects therein described. Thus of *R. nubigenus* it is said, "I have no males now before me," but the actual type which Kirkaldy was using was a ♂; of *R. nubicola*, "of this I have not seen a male," but the type is a ♂; of *R. procellaris*, "male yellowish-brown," but the unique type is a ♀.

R. oscillans is sunk under *subrufus*, but the two are distinct, and I suspect that the examples called *koclensis* by Kirkaldy are pale examples of *subrufus*. *R. subrufus*,

Kirkaldy = *R. oscillans*, Blackburn. For the species, which he originally called *R. rubritinctus* (having quite overlooked the head spines), he subsequently made a subgenus *Milu*, calling the species *R. kerasphoros*. *R. rubritinctus*, Blackburn, is quite distinct from this, the basal antennal joint being much less incrassate, and there are no head spines. Blackburn did not collect *R. kerasphoros*, though it is not rare close to Honolulu. The unique type of *R. koolensis*, Bl., is much damaged, but is evidently extremely like *R. subrufus* (= ? *koolensis*, Kirk.), and probably only a variety of this. *Reduviolus montivagus*, Kirk., afterwards considered to be a variety of *R. tarai*, is, I think, certainly not that species, but is probably the ♂ of *R. sharpianus*. Kirkaldy says that he has not seen a male of *montivagus*, but the unique type is a ♂. *R. volcanicola*, Kirk., is a synonym of *R. curtipennis*, Bl., the type of which I possess.

CAPSIDAE.

Cyrtopeltis confusa, sp. nov.

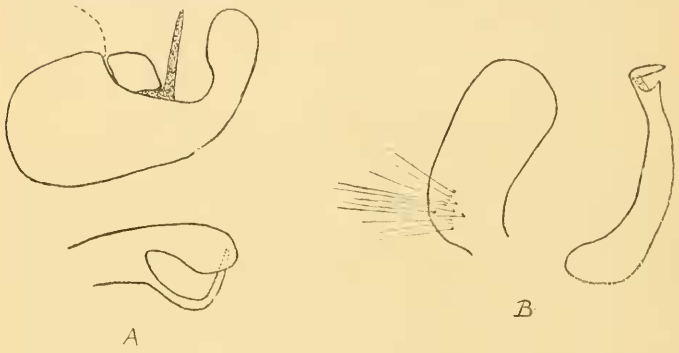
Entirely pale, flavescent, or sometimes more or less greenish tinged, in dark varieties with the clavus, apex of corium and of the cuneus infuscate, as also more or less of the basal antennal joint, and the pronotum may be mottled with fuscous. Head and pronotum with very sparse hairs, the head smooth and shining. Antennae long and slender, if laid back they would reach to or nearly to the apex of the tegmina, basal joint elongate, about four times as long as wide, second and third about equal and very slender, the fourth only about half as long as the second. Pronotum appearing elongate, being much narrowed in front, about twice as wide at the base as on its front margin, about as long as its width at the middle, its front lobe rather strongly convex, clothed with short pale pubescence like the tegmina, its hind margin strongly emarginate. Legs very long and slender, the hind femora with short pubescence and a row of fine, widely separated, bristles above, the tibiae pubescent and with longish pale bristles. Hind tibiae nearly three times as long as the tarsi.

Length 3·5–4 mm.

♂ with the terminal ventral segment very asymmetrical, produced on one side into a long process, dilated at the apex. On its inner side dorsally this production of the segment gives off a slender process, which is very strongly bent. Fig. A shows the outline of this segment in ventral aspect and the process subdorsally.

Hab. Oahu, common in all stages on *Gouldia* in the mountains.

Obs. This is the species referred to by Kirkaldy in his supplement to the Hemiptera, "Fauna Haw.," II, p. 553, as *Cyrtopeltis hawaiiensis*, but it clearly has nothing to do with that species, described in the same work, p. 138. The original series of *C. hawaiiensis*, excepting the type set, was destroyed during one of Mr. Kirkaldy's illnesses in hospital for want of attention. There was therefore no reason to assume, without comparison of specimens, that his original description of *Cyrtopeltis* was erroneous. I have an example from near the Waianae coast of Oahu, which agrees exactly with Kirkaldy's description of *C. hawaiiensis*, but is rather smaller. I should think *C. confusa* is decidedly not even congeneric with *C. hawaiiensis*, the very different antennae and pronotum, the larger and more coarsely faceted eyes and many other distinctions separating the two. At present, however, it is only necessary to call attention to the existing confusion of species with entirely different habits and appearance, especially as *C. confusa* is one of the most familiar endemic Hemiptera of the Honolulu district. *C. hawaiiensis* will probably be found on *Dodonaea viscosa*, which grows freely both above and below the true forest belt.



Tichorhinus tantali, sp. nov.

Colour in well-preserved dry specimens after four or five years preservation as follows: head, pronotum anteriorly, scutellum and legs yellow, sometimes more or less greenish tinged, pronotum

posteriorly and tegmina green ; clavus for the most part blackish, membrane smoky black, with a clear area adjoining and extending behind the cuneus. Second and following joints of the antennae dark, the second sometimes yellow except at the apex. Basal joint of antennae about three times as long as wide ; second about $1\frac{3}{4}$ the length of the third, fourth about $\frac{3}{4}$ as long as the latter. Eyes nearly similar in the sexes. Head, thorax and tegmina with pale pubescence. Bristles of the hind tibiae pale, the tarsi more or less dark.

Length 2·2 to about 3 mm.

♂ with the right and left clasper very unlike, the one wide and blunt at the apex with a tuft or area of very long hairs towards the base, the other narrow and elongate, somewhat twisted, with a chitinous hook at the apex, preceded by a sharp angle ; hairs near the base much shorter than on the other clasper (Fig. B).

This small and delicate species resembles some varieties *T. kanakanus*, but it is much smaller, very little variable and quite distinct structurally. Owing to the variability of some of the Hawaiian *Tichorhinus* the number of species is quite uncertain, and probably will remain so until the claspers and other male characters are thoroughly investigated.

Hab. Oahu, one of the commonest insects on Mt. Tantalus, near Honolulu, on the leaves of the Urticaceous tree *Pipturus*. It is also found in widely separated localities on the island.

Tichorhinus kirkaldyi, sp. nov.

Colour almost as in typical *T. kekele*, Kirk., but much smaller and easily distinguished structurally by the short basal joint of the antennae, which is only about twice as long as wide. Tegmina seen from in front or from the side with black hairs and no appressed golden pubescence. Hairs of the head and pronotum and the bristles of the hind tibiae black. Membrane smoky, with a white spot adjoining the cuneus. Hind tibiae hardly four times as long as the tarsi. The second joint of the antennae is much wider in proportion to its length than that of *O. kekele*.

Length about 2·5 mm.

Hab. Hawaii, Kilauea; found on *Cyathodes*.

LYGAEIDAE.

Nysius nitidus, F. B.-W.

Blackburn's specimens are from Lanai and Maui, and some, if not all, of them are clearly identical with *N. saundersianus*, Kirkaldy. Unless, therefore, the actual type proves to be different from these, *saundersianus* becomes a synonym. *N. nitidus* is a common insect, often swarming in all stages on the Urticaceous tree, *Urera*, but it is not confined to it. It is known from all the islands, excepting Kauai.

Nysius maniensis, Bl.

This is the only type in Blackburn's collection of *Nysius* that is in bad condition and in a fragmentary state, and it is one of the few previously described species that Kirkaldy identified (I believe, correctly) from the description. It is known from Hawaii and Lanai, as well as Maui.

Nysius arboricola, F. B.-W.

A very variable species, common throughout the mountains of Oahu, usually frequenting the branches of trees, living or dead. The variation affects not only the colour, but also the form and sculpture of the insect. It is the type of Kirkaldy's subgenus *Oceanides*, and his specific name *nimbatus* becomes a synonym.

Nysius rubescens, F. B.-W.

I have only taken this at Kilauea, Hawaii. It was left unnamed by Kirkaldy, who had specimens from that locality. The upper angle of the metapleura is very little prominent, so that the emargination is slight. The hind femora are pale, with inconspicuous or little spotting.

Nysius dallasi, F. B.-W.

A pale stramineous species, with a conspicuous longitudinal black band on each side of the head, bordering the eyes, and the prothoracic callosities also black; femora rather sparsely and inconspicuously spotted; metapleura distinctly emarginate, but the upper angle is not very strongly produced backwards. Superficially it is most like a pallid *N. delectus*.

Nysius longicollis, Bl.

A pale, dull, and pubescent species, with black longitudinal bands along the inner orbits and a rather wide transverse band across the pronotum, produced backwards in the middle as a median longitudinal band, not reaching the hind margin; two dark lines on the corium, starting about the middle of its length and almost appearing as a single elongate mark, unless the wings are spread, and running into a dark line along the apical margin, the membrane smoky, divided by pale longitudinal lines, two middle areas being darker than the others; femora very conspicuously black-spotted, both inwardly and outwardly; metapleura slightly concave, the upper angle rounded and very prominent.

Known to me only by the unique type, but on Maui is a closely allied species or local form. Probably a sublittoral, or at least not a forest insect.

Nysius whitei, F. B.-W.

A more or less testaceous or yellowish-brown species, shining and glabrous, with a median yellow line on the head, the pronotal callosities not dark; metapleura quite strongly emarginate, the upper angle being strongly produced. There is a median dark spot formed along the line of union of the clavi, three along the apical margin of each corium and one at the base of the membrane, adjoining the middle one of the three corial spots. Front and middle legs clear yellowish, hind femora with a dark band beyond the middle.

The single specimen in Blackburn's collection is from Hawaii.

Nysius delectus, F. B.-W.

This is not the *N. delectus* of Kirkaldy, that very common insect being left unnamed in Blackburn's collection or labelled *N. delectus?* N. No. 100, N. No. 71, etc. True *delectus* is distinguished by the darker antennae, the much more strikingly marked femora, the widely black apices of the hind tibiae, etc. The specimens are all from Oahu, and I have only seen those collected by Mr. Blackburn. The *N. delectus* of Kirkaldy is ubiquitous in the islands.

Nysius blackburni, F. B.-W.

This is *N. lichenicola*, Kirkaldy, a species common on Maui and Hawaii, and very variable in colour.

Nysius vulcan, F. B.-W.

This is common at Kilauea, Hawaii, and specimens from this locality and considered (probably rightly) by Kirkaldy as identical with others from Lanai and Molokai, which he described as *N. montivagus*, are clearly *N. vulcan*. The actual type of *N. montivagus* is from Lanai.

N. pteridicola, F. B.-W.

This distinct species is the one described as new by Kirkaldy under the name *N. insulivagus*.

N. coenosulus, St.

Buchanan-White and Kirkaldy identified the same species under this name, but the latter had mixed therewith some quite different species, including *N. nemorivagus*, F. B.-W.

N. nemorivagus, F. B.-W.

This is a very distinct species, the dark antennae, the pale mottled tegmina and conspicuously black-spotted femora being evident superficial characters. The metapleura are very little emarginate in some examples, more so in others. It occurs at Kilauea, and was apparently considered a variety of *N. coenosulus* by Kirkaldy.

N. kamehameha, Kirk.

This appears to me to be very close to the true *N. delectus*, F. B.-W.

N. ochriasis, Kirk.

Usually found in the native composite plants, *Raillardia*.

N. oribasus, Kirk.

Probably a dark variety of the very variable *N. arboricola*, F. B.-W.

N. oresitrophus, Kirk.

The unique type has evidently been placed in a damp jar for relaxation until the gum has spread over the whole surface. Until cleaned it is in no condition for being described. The description will probably be found incorrect.

N. monticola, Kirk.

I have a specimen of the other sex from Haleakala, Maui. The rostrum appears rather shorter, but it is clearly the same species.

N. nubicola, Kirk.

The rostrum reaches behind the hind coxae in this species, and far behind the coxae in *N. pteridicola*. *N. nubicola* is the No. 120 of the Blackburnian collection, but was never described.

N. hylaeus, Kirk.

Described from Kauai, occurs also as a variety with the dark markings less developed on Oahu.

Nysius haleakalae, sp. nov.

Glabrous, smooth and shining, the rostrum shortish (if laid back probably reaching about to the hind coxae), hind margin of metapleura hardly concave, the upper angle almost a rectangle. Allied to *Nysius whitei*. Colour brownish-yellow, the head especially and part of the corium suffused with red. Hind lobe of the pronotum, except the hind margin, and much of the clavus and corium dark brown or infuscate; membrane with median conspicuous dark longitudinal band of infuscation. Front and middle legs wholly pale, yellow; the hind femora dark on more than the apical half, excepting the pale apex itself, their base as well as the tibiae and tarsi pale. Antennae yellow, a small spot at the base of the 2nd and 3rd joints dark. Head very smooth and shining, without rugulosity. Pronotum with a transverse row of punctures behind the front margin, another row behind the callosities, behind this very sparsely and subobsoletely punctate; scutellum pale, with dark punctures along each side. Tegmina smooth and shining. Abdomen beneath black, except the red apex and lateral margins.

♂. Length 4·5 mm.

Distinguished from *N. whitei* by the more widely banded hind femora, less emarginate metapleura, smoother head, etc.

Hab. Maui, Haleakala, below 2,000 ft.

Nysius hiloensis, sp. nov.

Flavescent, shining, the head black; the head and pronotum with very delicate pubescence, hardly noticeable except on the black

head, where its golden colour renders it more evident. Antennae pale, scape near the tip and extreme base of the following joints with a small dark spot. Clypeus, a line adjoining it on each side, and one surrounding each eye, yellow. Pronotum flavescent, the callosities rather browner, the hind angles with a dark spot and sometimes a median one between these; scutellum more or less brownish-suffused, dark only in the extreme front; tegmina, with the corium and clavus, generally more sordid than the pronotum, but the former quite pale along the costal margin, at the apex of which is a dark spot; membrane with a conspicuous large smoky-black apical median spot, and a round one near the corium. Owing to the transparency of the membrane, when the tegmina are closed two round spots are naturally seen, one belonging to each membrane, followed by a large apical wedge-shaped mark. Legs yellow, the hind femora generally feebly and sparsely spotted with fuscous.

Rostrum short, reaching to the metasternum, the metapleura conspicuously emarginate behind, the upper angle acutely produced. Head dull, very minutely rugulose or subgranulate; pronotum shining, moderately closely punctured, the callosities, a narrow median line, and the extreme hind margin impunctate.

♂. Length 3–4·5 mm.

Hab. Hawaii, Hilo, about 1,200 ft.

Nysius comitans, sp. nov.

General appearance and colour almost identical with that of *N. hiloensis*, but it differs as follows: the head is reddish or brownish, sometimes infuscate in front and with a very distinct median longitudinal pale yellow line, which, however, does not form a percurrent stripe with the clypeus; all the femora bear conspicuous black dots, the infuscate pattern of the membrane is generally much fainter, the meso- and metapleura are reddish or reddish-brown (in *hiloensis* they vary in colour but are partly or sometimes nearly wholly black). Metapleura conspicuously emarginate behind, as in *hiloensis*, but the rostrum is long and reaches well behind the posterior coxae; sculpture and clothing as in *N. hiloensis*.

♂ ♀. Length 4–4·5 mm.

Hab. Hawaii, Hilo, about 1,200 ft.

Nysius delectulus, sp. nov.

This name may be used for the extremely abundant insect called *N. delectus* by Kirkaldy. It is very like that species, but may easily be distinguished by red or pale second and third antennal joints, which are either all black above in *delectus* or at least widely dark at

the base. The femora are more or less conspicuously spotted, but less so than in *delectus*, in which on the upper side of all the femora the black spots often unite to form a continuous line and the apices of the tibiae are much more black.

This species varies much in size and in the colour of the head. In some examples there is only a narrow longitudinal median pale line on this part, in others the whole of the middle of the head in front is widely red.

N. delectulus is the Nysius 101 from Hawaii and 71 from Maui of the Blackburnian collection. Specimens from Oahu are wrongly named *N. coenosulus*.

Hab. All the islands from sea level to high elevations in the mountains.

Nysius sublittoralis, sp. nov.

Rufescent, dull, covered with whitish fine appressed pubescence, a longitudinal stripe along each side of the head, the region of the callosities, forming a band across the pronotum, one or more areas on the scutellum, black or dark-coloured ; clypeus white, or whitish. Tegmina with the widely explanate costal margins of the corium conspicuously white in fresh examples, all the rest of the corium and the clavus appearing comparatively sordid, in old examples yellow, a conspicuous dark longitudinal stripe down the middle of the corium and generally a dark line on each side of this, each about equidistant from it and subparallel, apical angle without a dark spot ; membrane white with two dark longitudinal stripes, and sometimes a third. Legs of an obscure reddish colour, the femora with only very inconspicuous darker dots, or without any.

A very narrow, elongate species, the rostrum reaching only to the base of the hind coxae, the metapleura with the hind margin truncate or nearly so. Pronotum very long, the punctures rather fine and dense and much more even than in most of the other species. Head with only some fine punctures, not at all rugulose, but the sculpture is in fresh examples concealed beneath the tomentose clothing and that of the pronotum appears more sparse than is really the case.

Length ♂ ♀, 4–5·5 mm.

This species appears to resemble *N. longicollis* more closely than any other species, but it is very distinct by the more widely explanate costal margins of the tegmina, the unspotted or faintly marked femora, etc. Blackburn took specimens on Maui (*Nysius* No. 72).

Hab. Oahu, Maui, on the lowlands ; Hawaii in the higher fields of sugar cane.